

CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. **(Currently Amended)** A method of identifying fault conditions in an automation system comprising:

identifying components and sensors in the system,

identifying inputs to each identified component,

receiving outputs from said sensors;

determining functional relationships between the inputs and outputs for each identified component,

determining a plurality of weight values for a plurality of possible fault conditions for each component based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred; and

determining the most likely fault condition from said possible fault conditions based on said weight values.

2. **(Previously Presented)** A method according to claim 1, further comprising the step of using the identified inputs and outputs of a specific component and sensors and the functional relationships of a corresponding generic component to identify a possible fault condition.

3. **(Previously Presented)** A method according to claim 2, further comprising the step of defining component libraries that describe the functional relationships of the generic component.

4. **(Previously Presented)** A method according to claim 2, further comprising the step of creating a diagnostic program from the functional relationships of a generic component associated with each component.

5. (Previously Presented) A method according to claim 4, further comprising the step of transforming the functional relationships into fault conditions.

6. (Previously Presented) A method according to claim 5, wherein the step of transforming is implemented in an off-line phase during which the diagnostic program is created, and an on-line phase during which available inputs and outputs are supplied to the transformed functional relationships in the control program to identify fault conditions.

7. (Cancelled)

8. (Previously Presented) A method according to claim 1, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

9. (Currently Amended) A method of defining diagnostic code for an automation system comprising:

- identifying the functional elements and associated sensors of the system;
- defining inputs for each of the functional elements;
- receiving outputs from said associated sensors;
- defining functional relationships between inputs and associated outputs for each functional element;
- expressing the functional relationships using a programming language;
- determining a plurality of weight values for a plurality of possible fault conditions for each functional element based on said functional relationship, wherein the weight values are based on the number of times a possible fault occurred; and
- determining the most likely fault condition from said possible fault conditions based on said weight values.

10. (Previously Presented) A method according to claim 9, wherein the programming language is a symbolic language.

11. (Previously Presented) A method according to claim 9, wherein the step of defining functional relationships for at least some of the functional elements includes utilizing a component library that defines the functional relationships between inputs and outputs of at least one generic element.

12. (Previously Presented) A method according to claim 11, wherein the step of defining the functional relationships includes the step of defining functional relationships and inputs and outputs of a generic element corresponding to the functional elements in the system.

13. (Previously Presented) A method according to claim 9, further comprising the step of including state information for at least one of the components to define the state of the component at a different time.

14.-19. (Cancelled)